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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,698	08/23/2006	Bernd Pfannschmidt	PFANNSCHMIDT-2	2005

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EXAMINER	
NGUYEN, TRAN N	

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2834	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,698	PFANNSCHMIDT ET AL.	
	Examiner	Art Unit	
	Tran N. Nguyen	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) 12-22 is/are pending in the application.

4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 16-19,21 and 22 is/are rejected.

7)☒ Claim(s) 20 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 16-17 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Koyama et al (JP357049344A)** in view of **Endress et al (US 3241331)**.

Koyama discloses an electrical machine (figs 1-2) comprising: a housing (10), a stator core (7) arranged in the housing and terminating in an end winding area; and, a rotor core (11) arranged in the housing and terminating in an end winding area, wherein at least one member selected from the group consisting of the stator core and the rotor core has an axial cooling channel (21,22), wherein at least one of the end winding areas accommodates a cooling channel (21) protrusion in prolongation of the cooling channel and in fluid communication with the cooling channel of the member for allowing a discharge of coolant from the housing, wherein the housing includes a mounting plate (10), and the stator core, with the cooling channel protrusion configured as a tube (21) guided through the mounting plate (10). **Koyama** substantially discloses the claimed invention; except for the limitations of *the stator and the rotor are respectively laminated cores.*

Endress, however, teaches an electrical machine being configured with laminated rotor core having cooling channel, and laminated stator core also having cooling channel (fig 1). Those skilled in the art would realize that stator and/or rotor being configured with laminated core are very well known in the art because laminated core would reduce eddy current by increasing ohmic resistance to enhance the electromagnetic as well as electrical characteristics thereof; also, the cooling channels configured there within the rotor core would enable coolant fluid to circulate for reducing heat.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the machine by provided the machine with laminated stator core and laminated rotor core that respectively having cooling channels, as taught by Endress. Doing so would provide the machine with reduced eddy current to enhance the electromagnetic as well as electrical characteristics thereof; also, the cooling channels configured there within the rotor core would enable coolant fluid to circulate for reducing heat.

Regarding claimed language of method for cooling, as in claim 21. The combination of Koyama and Endress discloses the structure of the machine with a cooling system, it would have been obvious to one skilled in the art at the time the invention was made to derive a method for cooling the machine based on the cooling features and system because the method of cooling would be the counterpart of the cooling system.

2. **Claims 16-18 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Koyama et al (JP357049344A)** in view of **Hasebe et al. (US 5,889,342)**.

Koyama discloses an electrical machine (figs 1-2) substantially discloses the claimed invention, wherein the rotor also having cooling channel protrusion through the end ring of the housing for cooling the rotor; however, Koyama does not disclose the limitations of the following:

the stator and the rotor are respectively laminated cores;

the rotor clamping ring assembly, wherein the cooling channel protrusion is part of the rotor clamping ring assembly.

Hasebe, however, teaches a machine having laminated stator core and laminated rotor core, wherein the rotor is provided with rotor clamping ring assembly (21a, and 21b, Fig. 3) for maintaining integrity of the laminated rotor core (3) (Fig. 3), wherein the cooling channel protrusion (22, Fig. 3) is part of said rotor clamping ring assembly. The advantage of Hasebe rotor clamping ring assembly is to provide both mechanical support and a cooling feature for a rotor having a core fabricated of common steel sheets (col. 1, lines 57-60) and a rotor ring assembly to provide axial positioning for the rotor and communication coolant passages for the rotor core (col. 2, lines 9-10 and 17-20).

Both Koyama and Hasebe disclose rotor having cooling channel protruding out of the rotor core. Hasebe further teaches that by providing a rotor clamping ring assembly would provide mechanical support to the laminated core, wherein the cooling channel protrusion is part of said rotor clamping ring assembly for cooling ventilation.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a rotor clamping ring assembly, wherein the cooling channel protrusion is part of said rotor clamping ring assembly, as taught by **Hasebe**. Doing so would provide a machine with laminated cores for reducing eddy current to enhance the electrical characteristics thereof; also, the rotor clamping ring assembly would provide mechanical support to the laminated core, wherein the cooling channel protrusion is part of said rotor clamping ring assembly for cooling ventilation.

3. **Claims 16, 18 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakamura et al (EP000581966A1)** in view of **Hasebe et al. (US 5,889,342)**.

Nakamura discloses an electrical machine (figs 1-2) a laminated stator core (14) arranged in the housing and terminating in an end winding area and has an axial cooling channel (30), wherein at least one of the end winding areas accommodates a cooling channel protrusion (34, 34a) in prolongation of the cooling channel and in fluid communication with the cooling channel of the member for allowing a discharge of coolant from the housing substantially discloses the claimed invention, except for the limitations of the following:

the rotor is laminated core having a clamping ring assembly, wherein the cooling channel protrusion is part of the rotor clamping ring assembly.

Hasebe, however, teaches a machine having laminated stator core and laminated rotor core, wherein the rotor is provided with rotor clamping ring assembly (21a, and 21b, Fig. 3) for maintaining integrity of the laminated rotor core (3) (Fig. 3), wherein the cooling channel protrusion (22, Fig. 3) is part of said rotor clamping ring assembly. The advantage of Hasebe rotor clamping ring assembly is to provide both mechanical support and a cooling feature for a rotor having a core fabricated of common steel sheets (col. 1, lines 57-60) and a rotor ring assembly to provide axial positioning for the rotor and communication coolant passages for the rotor core (col. 2, lines 9-10 and 17-20). Hasebe further teaches that by providing a rotor

clamping ring assembly would provide mechanical support to the laminated core, wherein the cooling channel protrusion is part of said rotor clamping ring assembly for cooling ventilation.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a rotor clamping ring assembly, wherein the cooling channel protrusion is part of said rotor clamping ring assembly, as taught by **Hasebe**. Doing so would provide a machine with laminated cores for reducing eddy current to enhance the electrical characteristics thereof; also, the rotor clamping ring assembly would provide mechanical support to the laminated core, wherein the cooling channel protrusion is part of said rotor clamping ring assembly for cooling ventilation.

4. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Koyama** (in alternation, over **Nakamura**) and **Hasebe**, as applied in the base claim, and further in view of **Blakeley et al (US 5,122,704).**

The combination of Koyama and Hasebe discloses the claimed invention, except for the added limitations of *the seal arranged between the rotor clamping ring assembly and the mounting plate.*

Blakeley, however, teaches a mounting plate (20, Fig. 1) and a rotor clamping ring assembly (200) with a seal (18, Fig. 1) between the rotor clamping ring assembly (200) and the mounting plate (20, Fig. 1) for the purpose of preventing liquid coolant from weeping into the machine air gap and cause windage losses (col. 2, lines 48-50).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide seal between the rotor clamping ring assembly and the mounting plate, as taught by Blakeley. Doing so would prevent liquid coolant to damage the rotor.

5. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Koyama** (in alternation, over **Nakamura**) and **Hasebe**, as applied in the base claim, and further in view of **Hess et al (US 6,097,116).**

The combination of Koyama and Hasebe discloses the claimed invention, except for the added limitations of *the cooling channel of the member in circumferential spaced-apart*

relationship such that coolant flows through in the cooling channels alternatively in opposite direction.

Hess, however, teaches a machine having coolant flowing through a plurality of axial cooling channels (34-37, Fig. 2; col. 5, lines 13-17) of the laminated stator core (13, Fig. 2) in circumferential spaced-apart relationship (col. 6, lines 10-15) such that coolant flows through the cooling channels alternately in opposite directions. The advantage of Hess teaching is to provide thermal isolation of the cooling of the stator and rotor in a simple manner (col. 2, lines 8-10).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide coolant flowing through a plurality of axial cooling channels in circumferential spaced-apart relationship such that coolant flows through the cooling channels alternately in opposite directions, as taught by Hess. Doing so would provide thermal isolation of the cooling of the stator and rotor in a simple manner (col. 2, lines 8-10).

Allowable Subject Matter

Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior-art of records individually or in combination teaches the additional limitations, as in claim 20: a plurality of said cooling channel protrusion communicating with the plurality of cooling channels in one-to-one correspondence, wherein *every other one of the cooling channels is connected to cooling channel protrusions on one end of the member, and the other one of the cooling channels us connected to cooling channel protrusions on an opposite end of the member.*

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen whose telephone number is 571-272-2030. The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. (Note: **Use this Central Fax number 571-273-8300 for all official response**.)

Do **not** use the Examiner's RightFax number without informing the Examiner first because, according to the USPTO policy, any document being sent via RightFax is treated as unofficial response and will not be officially dated until it is routed to the Central Fax.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TRAN NGUYEN
PRIMARY EXAMINER